

---

---

**Workplace air quality — Determination of  
total organic isocyanate groups in air  
using 1-(2-methoxyphenyl)piperazine and  
liquid chromatography**

*Qualité de l'air des lieux de travail — Dosage des groupements  
isocyanates organiques totaux dans l'air par dérivatisation avec la  
1-(2-méthoxyphényl)pipérazine et par chromatographie en phase  
liquide*



**PDF disclaimer**

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2007

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Case postale 56 • CH-1211 Geneva 20  
Tel: + 41 22 749 01 11  
Fax + 41 22 749 09 47  
E-mail [copyright@iso.org](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Published in Switzerland

# Contents

Page

Foreword.....	v
Introduction .....	vi
1 Scope .....	1
2 Normative references .....	2
3 Terms and definitions.....	2
4 Principle.....	3
5 Reagents and materials .....	3
6 Apparatus .....	6
7 Sampling.....	7
7.1 Calibration of pump.....	7
7.2 General.....	7
7.3 Preparation of sampling equipment (general) .....	8
7.4 Preparation of sampling equipment (filters) .....	8
7.5 Preparation of sampling equipment (impingers).....	8
7.6 Collection of filter samples (vapour phase samples) .....	8
7.7 Collection of impinger backed by filter samples (isocyanate aerosols).....	9
7.8 Measurements to be made at the end of the sampling period.....	9
7.9 Sample logging and field desorption of samples.....	9
7.10 Transportation.....	9
7.11 Field Blanks .....	10
8 Procedure .....	10
8.1 Safety precautions.....	10
8.2 Cleaning of glassware .....	10
8.3 Prereaction of impinger samples before HPLC analysis.....	10
8.4 Prereaction of filter samples before HPLC analysis .....	10
8.5 HPLC conditions .....	10
8.6 Determination of airborne isocyanate for monomeric isocyanates (UV detection) .....	11
8.7 Identification of polymeric isocyanates: EC/UV ratio approach .....	11
8.8 Confirmation of identification for polymeric isocyanates (prepolymers).....	12
8.9 Quantification of airborne isocyanate for polymeric isocyanates (EC detection).....	13
8.10 Sampling efficiency .....	13
9 Calculations.....	14
10 Interferences .....	14
11 Uncertainty of measurement .....	14
11.1 Introduction .....	14
11.2 Assessment of performance characteristics of the method — Sampling considerations (detailed ISO/IEC Guide 98:1995 approach).....	16
11.3 Assessment of performance characteristics of the method — Other considerations — (detailed ISO/IEC Guide 98:1995 approach).....	17
11.4 Mass of compound in field sample blank.....	21
11.5 Between-laboratory uncertainty contributions.....	22
11.6 Combined uncertainty .....	22
11.7 Expanded uncertainty .....	22
12 Stability.....	22
13 Test report .....	22